Claims

[c1]   1. A method for analyzing molecules, comprising:

the act of directing an excitation beam to a plurality of pixel locations on a probe array having a plurality of probe locations, each probe location including one or more probe molecules;

the act of detecting an emission signal having one or more emission values, wherein the emission signal is responsive, at least in part, to the excitation beam;

the act of generating a plurality of pixel data based, at least in part, on the emission values;

the act of analyzing the pixel data to generate intermediate results;

the act of storing the pixel data, the intermediate results, or both, in one or more data structures; and

the act of enabling a user-provided software application to access the one or more data structures, including providing at least one applications programming interface and employing one or more code libraries to enable transfer of user data from the user-provided software application directly or indirectly to at least one of the data structures.

[c2]   2. The method of claim 1 , wherein:

the user data includes data from a plurality of biological experiments.

[c3]   3. The method of claim 1 , wherein:

the probe molecules include nucleic acids.

[c4]   4. The method of claim 3 , wherein:

the nucleic acids include synthesized nucleic acids.

[c5]   5. The method of claim 1 , wherein:

the probe molecules include peptides or polysaccharides.

[c6]   6. The method of claim 1 , wherein:

the probe array includes a spotted array.

[c7]   7. The method of claim 1 , further comprising:

the act of enabling one or more target molecules to interact with one or more

probe molecules.

[c8]   8. The method of claim 7 , wherein:

the one or more target molecules include any one or more of the following

biological materials: cells; proteins; genes, EST's, or other DNA sequences;

ligand; receptor; peptide; or nucleic acid.

[c9]   9. The interface of claim 1 , wherein:

the code libraries include an object type library.

[c10]   10. The interface of claim 1 , wherein:

the code libraries include executable code callable from the user-provided

software.

[c11]   11. An applications programming interface comprising:

one or more code libraries constructed and arranged to enable transfer of user

data from a user-provided software application directly or indirectly to at least

one data structure;

wherein the user data includes data from one or more biological experiments, at

least one of which is related to one or more probe arrays.

[c12]   12. The interface of claim 11 , wherein:

the code libraries include an object type library.

[c13]   13. The interface of claim 11 , wherein:

the code libraries include executable code callable from the user-provided

software.

[c14]   14. The interface of claim 13 , further comprising:

one or more server executables constructed and arranged to interface between

the executable code and the at least one data structure.

[c15]   15. The interface of claim 14 , wherein:

at least one of the server executables is a COM server.

[c16]

16. The interface of claim 11 , wherein:

the number of biological experiments is more than one, and

the one or more code libraries are further constructed and arranged to enable batch transfer of the user data from the more than one biological experiments.

[c17]   17. The interface of claim 11, wherein:
the biological experiments include experiments using at least one synthesized array or at least one spotted array.

[c18]   18. The interface of claim 11, wherein:
the biological experiments include experiments using at least one synthesized array and at least one spotted array.

[c19]   19. The interface of claim 11, wherein:
the at least one data structure conforms, at least in part, to a publish database schema.

[c20]   20. The interface of claim 19, wherein:
the publish database schema includes all or part of the AADM schema.

[c21]   21. The interface of claim 11, wherein:
the at least one data structure is included in a laboratory information management system.

[c22]   22. The interface of claim 21, wherein:
the laboratory information management system also includes a process database constructed and arranged to store identifiers of one or more locations where data of the at least one data structure are stored in a memory unit of a computer.

[c23]   23. The interface of claim 22, wherein:
the one or more code libraries further are constructed and arranged to enable transfer of user data from the user-provided software application to the at least one data structure based on the one or more locations stored in the process database.

[c24]   24. The interface of claim 11, further comprising:
one or more code libraries constructed and arranged to enable exporting of data directly or indirectly from the at least one data structure to the user-

provided software application.

[c25]   25. The interface of claim 14 , wherein:

the user-provided software application includes any one or more of the following: a data-mining tool, an image-processing tool, or a data-processing tool.

[c26]   26. The interface of claim 14 , wherein:

the user-provided software application includes a data-processing tool that includes any one or more of the following functions: determining degrees of hybridization, determining absolute expression of genes or EST's, determining differential expression over two or more experiments of genes or EST's, making genotype comparisons, detecting polymorphisms, or detecting mutations.

[c27]   27. The interface of claim 11 , wherein:

the one or more code libraries are constructed and arranged to enable the use of one or more high or low level programming languages.

[c28]   28. The interface of claim 27 , wherein:

the at least one language includes one or more of the following: Java, C++, Visual C ++, Visual Basic, ASP (Active Server Pages).

[c29]   29. A method for enabling a user-provided software application to access at least one data structure, comprising:

the act of providing one or more code libraries constructed and arranged to enable transfer of user data from the user-provided software application directly or indirectly to the at least one data structure;

the act of compiling a first executable code from at least a first of the one or more code libraries; and

the act of calling the first executable code from the user-provided software application;

wherein the user data includes data from a number of biological experiments, at least one of which is related to one or more probe arrays.

[c30]   30. The method of claim 29 , wherein:

the code libraries include an object type library.

[c31]   31. The method of claim 29 , further comprising:

the act of providing one or more server executables constructed and arranged to interface between the first executable code and the at least one data structure.

[c32]   32. The method of claim 29 , wherein:

the number of biological experiments is more than one, and

the one or more code libraries are further constructed and arranged to enable batch transfer of the user data from the more than one biological experiments.

[c33]   33. A computer program product for enabling a user-provided software application to access at least one data structure, wherein the computer program product comprises:

one or more code libraries constructed and arranged to enable transfer of user data from the user-provided software application directly or indirectly to the at least one data structure; and

wherein the user data includes data from a number of biological experiments, at least one of which is related to one or more probe arrays.

[c34]   34. The computer program product of claim 33 , further comprising:

a computer usable storage medium; and

wherein at least one of the one or more code libraries is embodied in the storage medium.

[c35]   35. The computer program product of claim 33 , further comprising:

a transmission medium; and

wherein at least one of the one or more code libraries is transmitted via the transmission medium.

[c36]   36. The computer program product of claim 35 , wherein:

the transmission medium includes a network.

[c37]   37. A software development kit for providing an application programmer with an interface to a laboratory information management system (LIMS) having at least one data structure having a first format, comprising:

at least one input applications programming interface (API) constructed and

adapted to provide to the application programmer a first set of parameters for inputting user data in a second format to a user-provided software application; and

wherein the second format is independent of the first format and the user data includes data from a number of biological experiments.

[c38]   38. The kit of claim 37, wherein:

the number of biological experiments is more than one; and

the at least one API is further constructed and arranged to enable batch transfer of the user data from the more than one biological experiments.

[c39]   39. The kit of claim 37, wherein:

the biological experiments include experiments using at least one synthesized array or one spotted array.

[c40]   40. The kit of claim 37, wherein:

the biological experiments include experiments using at least one synthesized array and at least one spotted array.

[c41]   41. A system, comprising:

a computer having at least one memory unit;

an information management system application constructed and arranged for execution on the computer;

one or more probe arrays; and

one or more code libraries constructed and arranged to enable transfer of user data from a user-provided software application directly or indirectly to at least one data structure stored in the memory unit;

wherein the user data includes data from a number of biological experiments, at least one of which is related to at least one of the probe arrays.

[c42]

42. A system, comprising:

a server computer having at least one memory unit;

an information management system application constructed and arranged for execution on the server computer;

one or more user computers coupled to the server computer over one or more

networks;

one or more probe arrays;

one or more scanners coupled to at least one of the user computers, constructed and arranged to scan the probe arrays; and

one or more code libraries constructed and arranged to enable transfer of user data from a user-provided software application directly or indirectly to at least one data structure stored in the memory unit;

wherein the user data includes data from a number of biological experiments, at least one of which is related to at least one of the probe arrays.